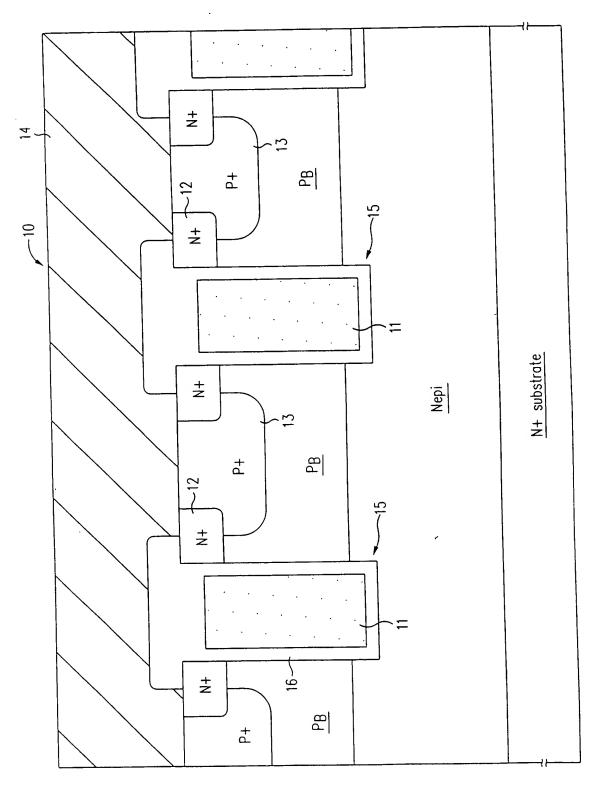
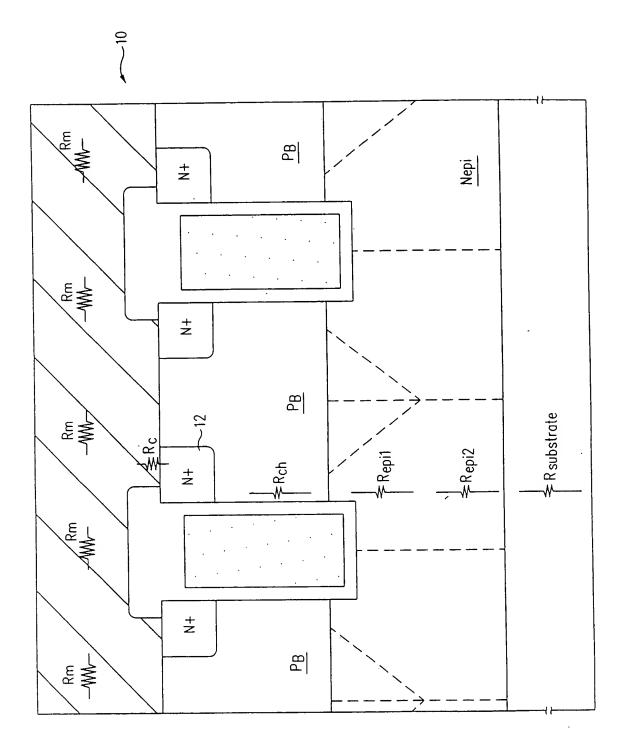
"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 1 of 58



(PRIOR ART) FIG. 1



(FRIOR ART) FIG. 2

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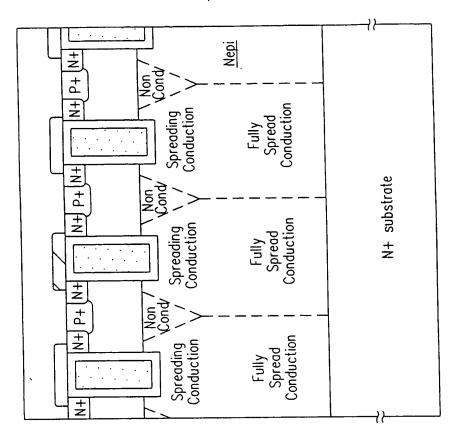
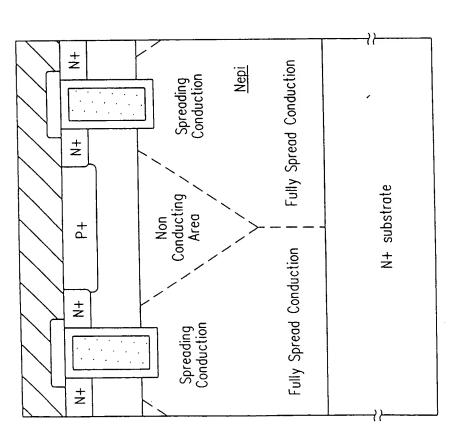
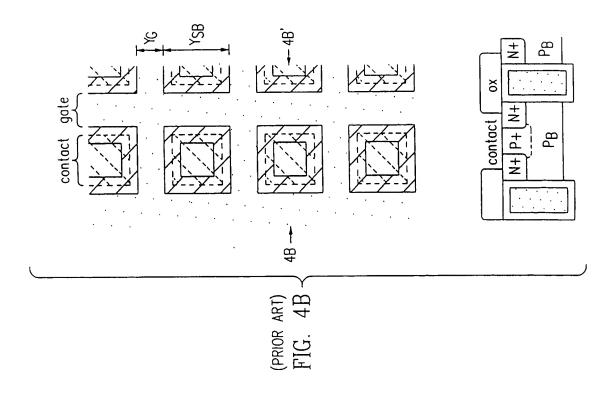


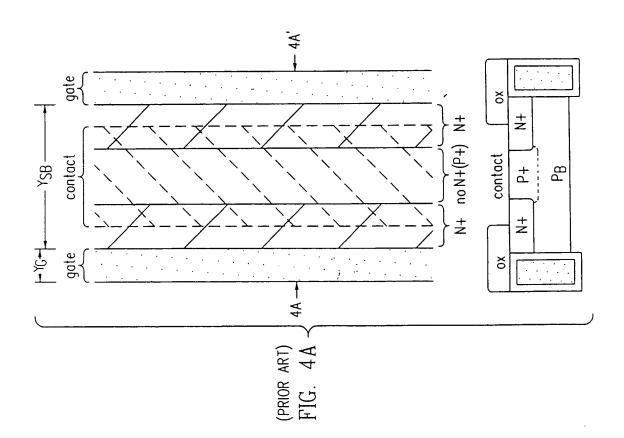
FIG. 3A (PRIOR ART)

FIG. 3B (PRIOR ART)



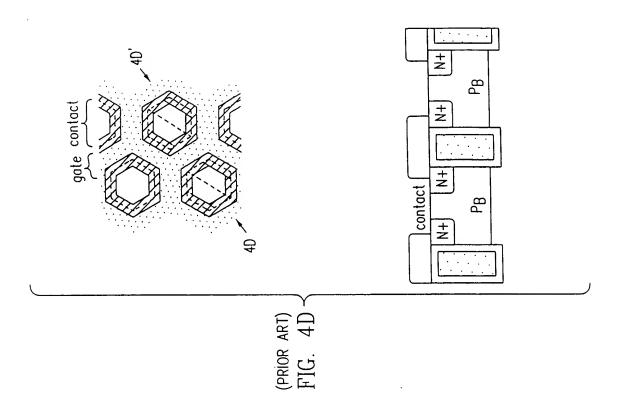
"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 4 of 58

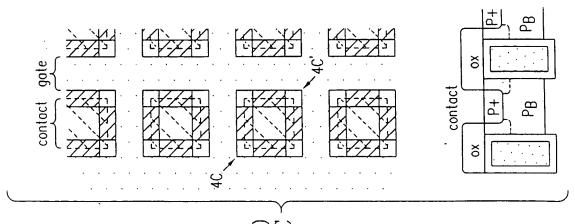




"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 5 of 58

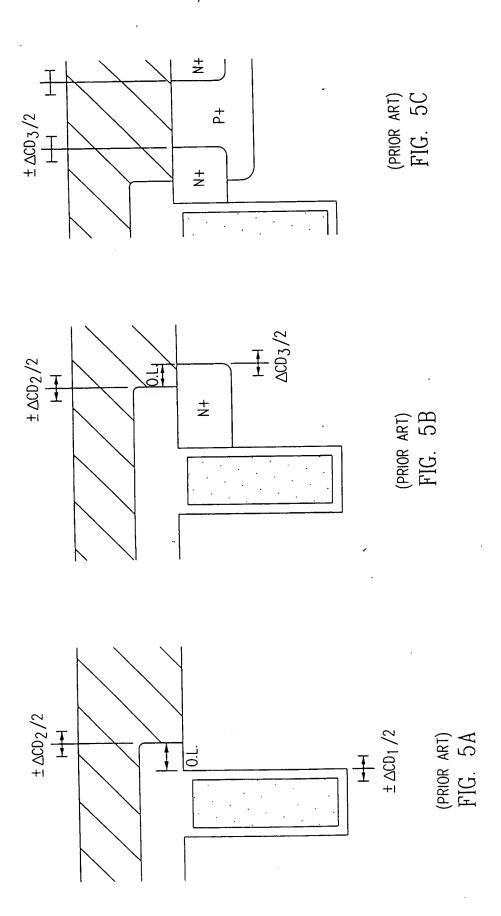
5/58





(PRIOR ART) FIG. 4C ≺

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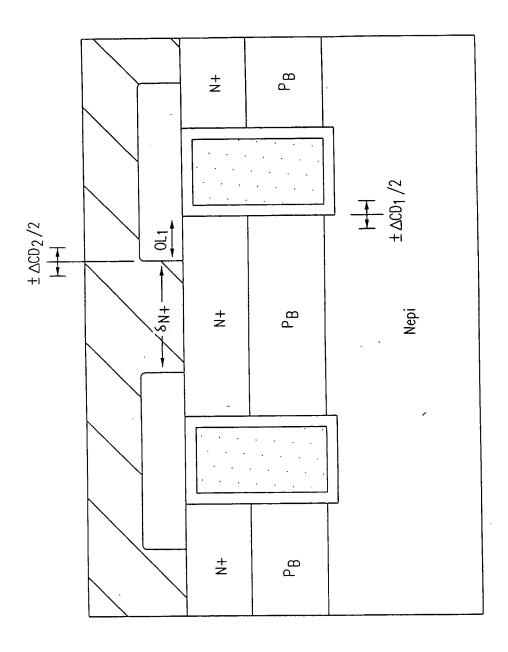


"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 7 of 58 7/58 ŧ (PRIOR ART) FIG. 5F ŧ overlap of metal onto N+ source ŧ (PRIOR ART) FIG. 5E poly exposed (short) -gate oxide attacked (PRIOR ART) FIG. 5D

oxide

N+ diffusions merged

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 8 of 58

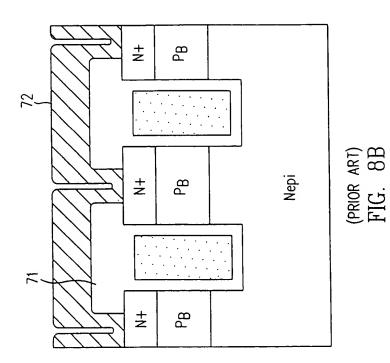


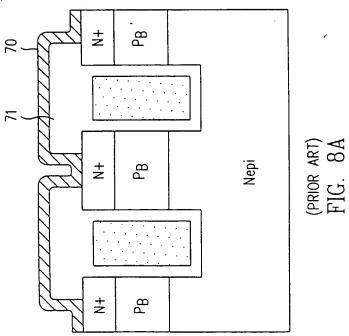
(PRIOR ART) FIG. 6

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 9 of 58 9/58 (PRIOR ART) FIG. 7B z direction (PRIOR ART) FIG. 7C ± z direction РВ ŧ N+ substrate (PRIOR ART) FIG. 7A Nepi РВ ŧ ŧ РВ

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 10 of 58

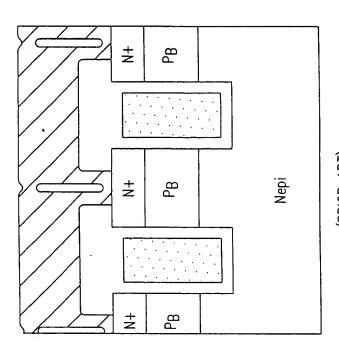
10/58



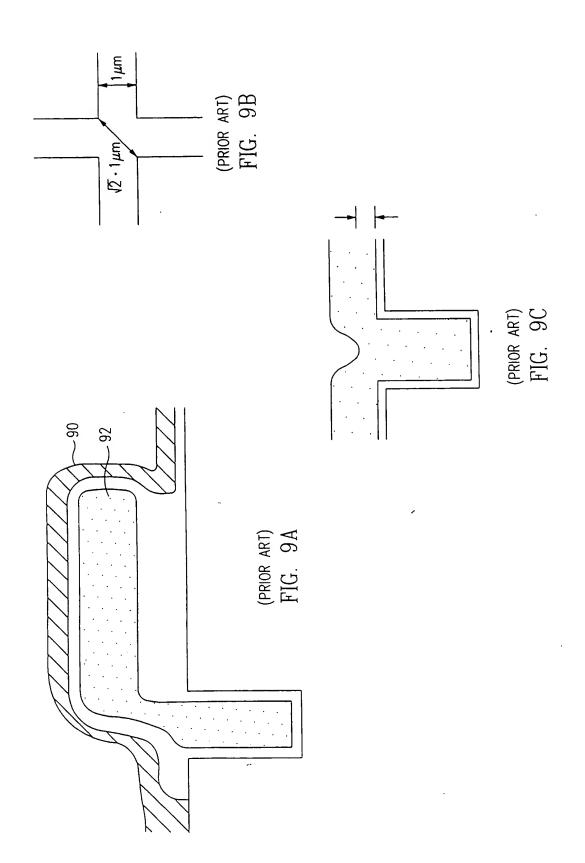


"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 11 of 58

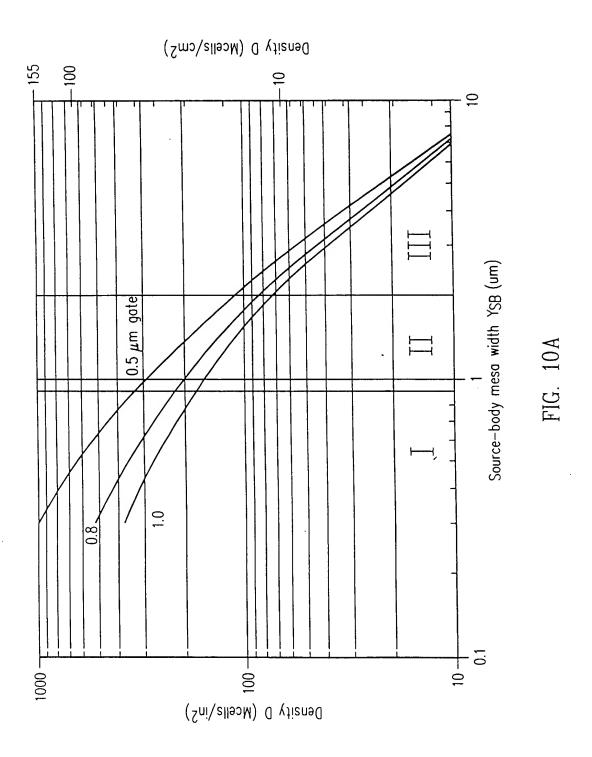
11/58

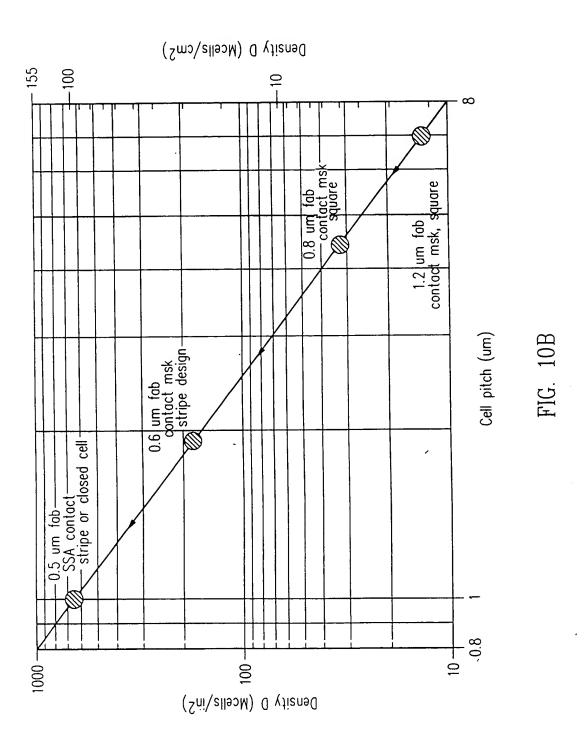


(PRIOR ARI) FIG. 8C

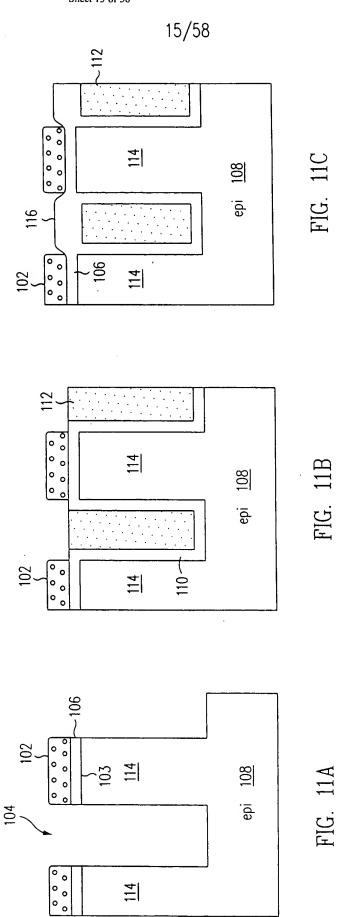


"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 13 of 58



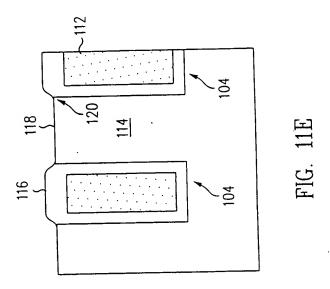


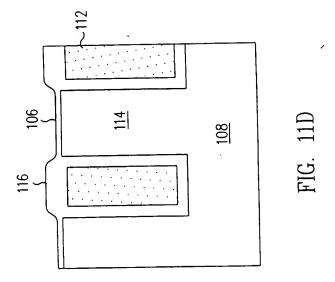
"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 15 of 58



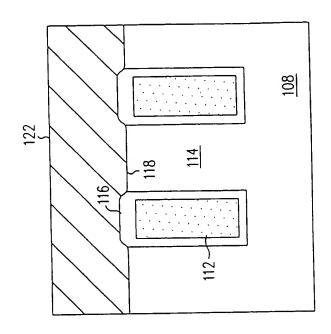
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"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 16 of 58

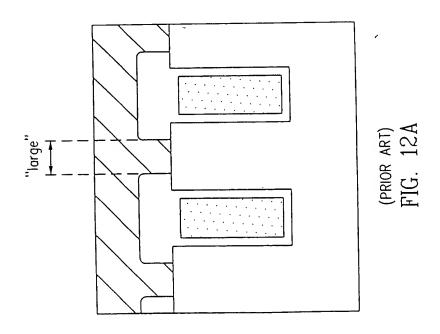




"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 17 of 58



7IG. 12B



"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 18 of 58

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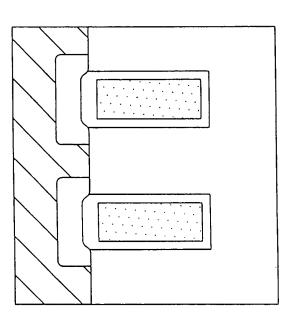
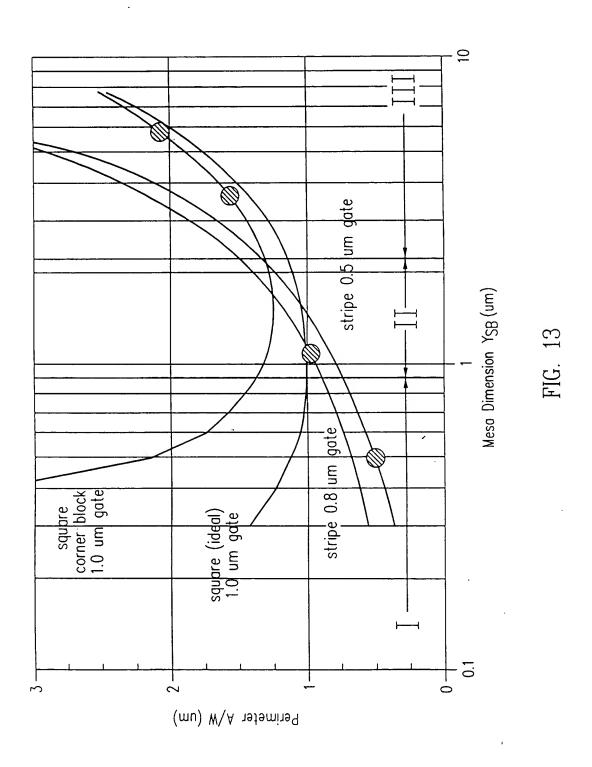
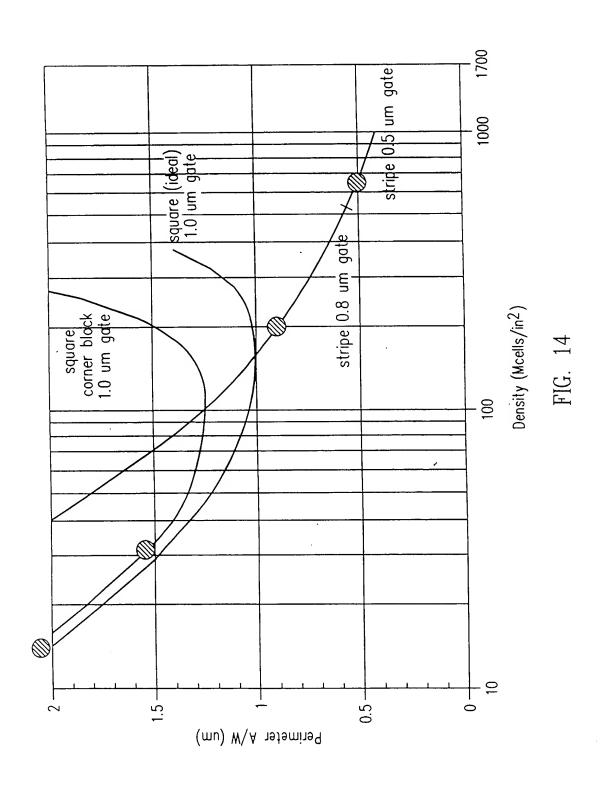


FIG. 12C





"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 21 of 58

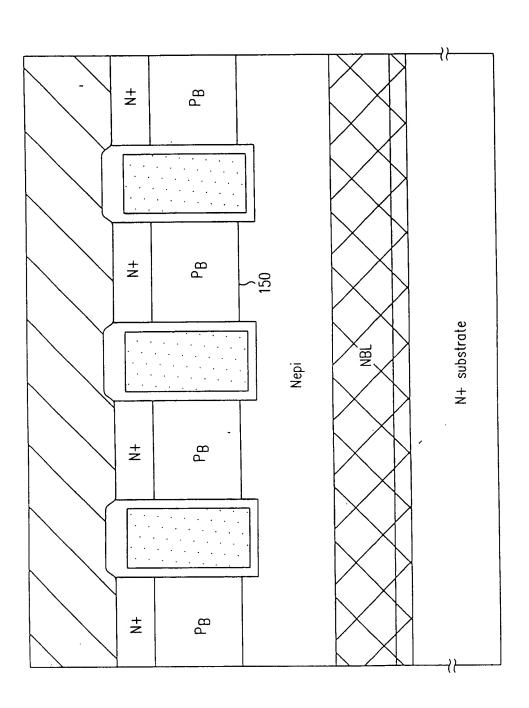


FIG. 15A

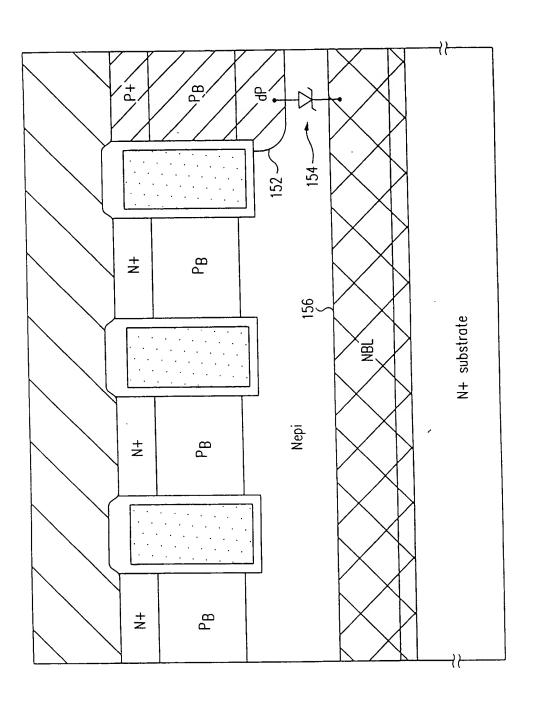


FIG. 15B

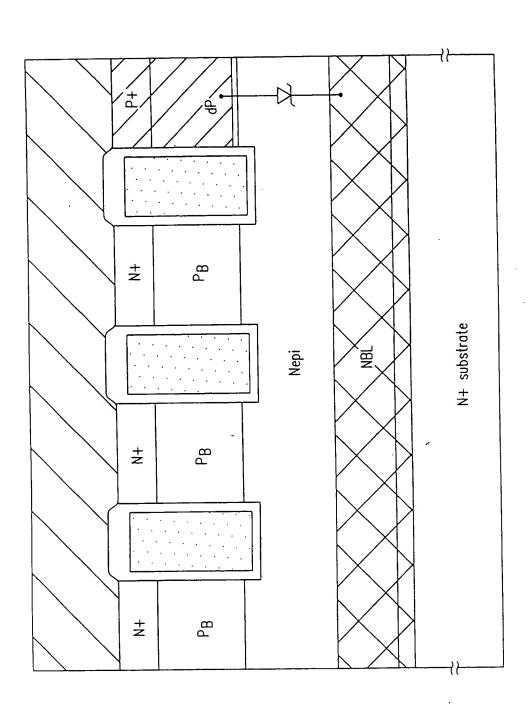


FIG. 15C

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 24 of 58

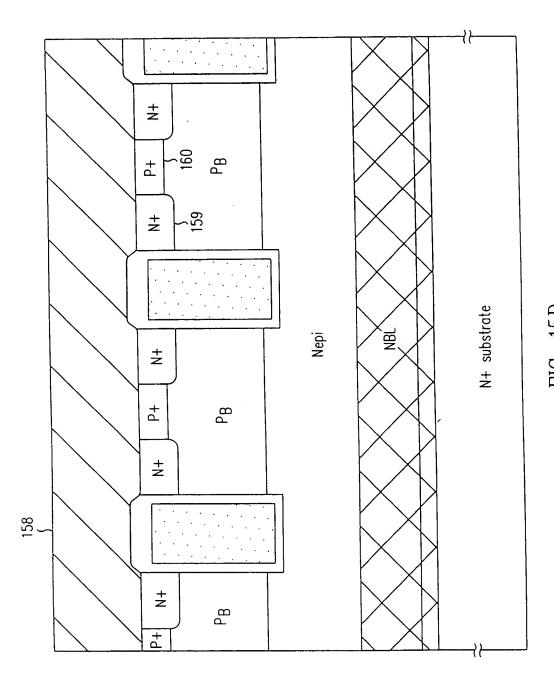
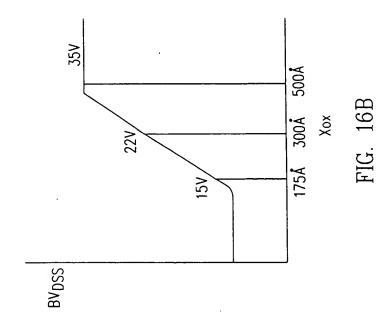
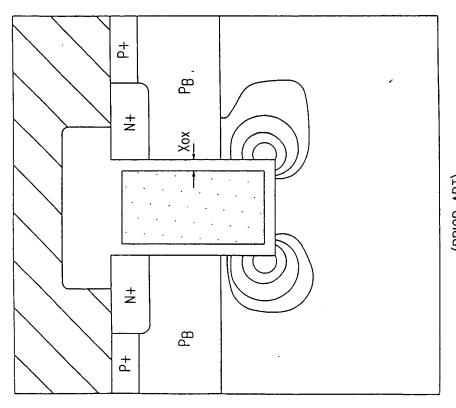


FIG. IDD

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 25 of 58

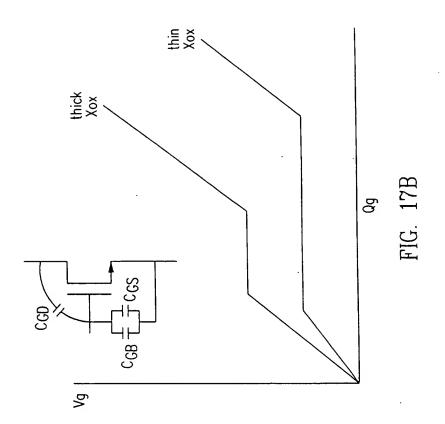




(PRIOR ART) FIG. 16A

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 26 of 58

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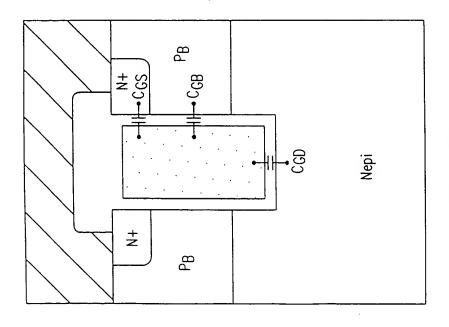
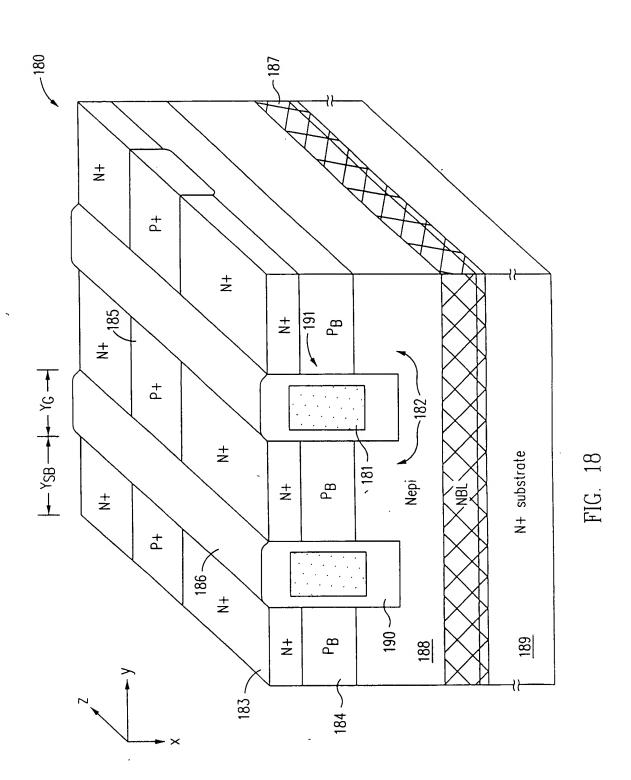
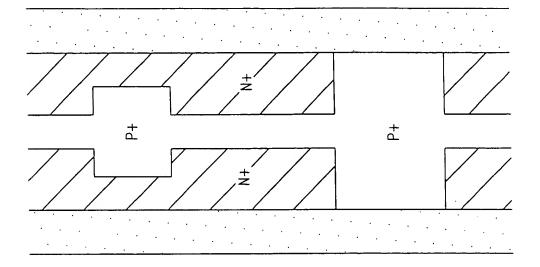


FIG. 171





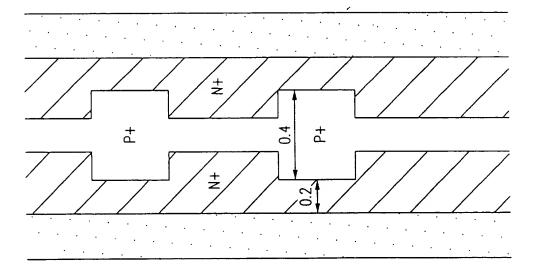
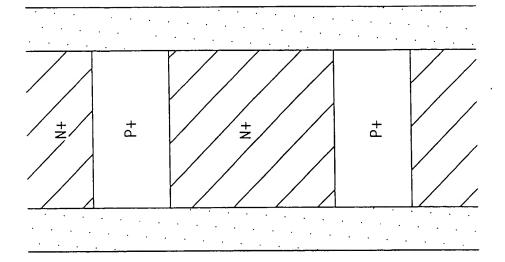


FIG. 19B

FIG. 19A



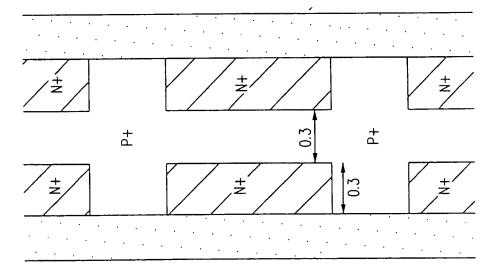
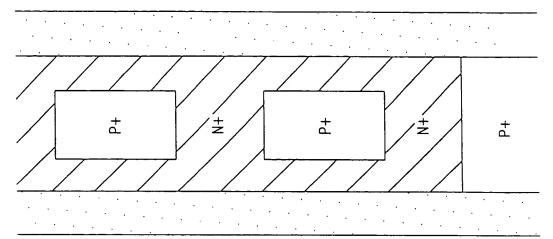
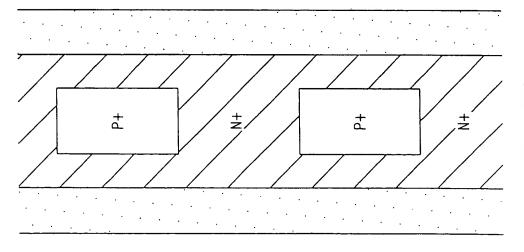


FIG 19D

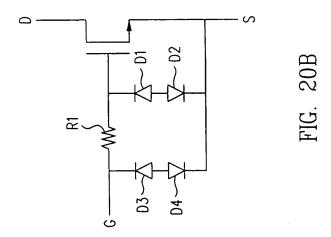
FIG. 19C

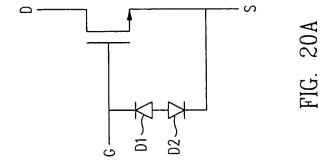
"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 30 of 58





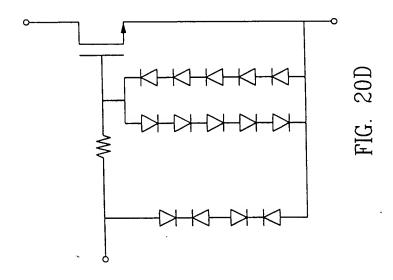
"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 31 of 58

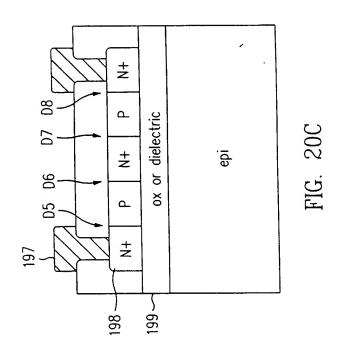




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"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 33 of 58

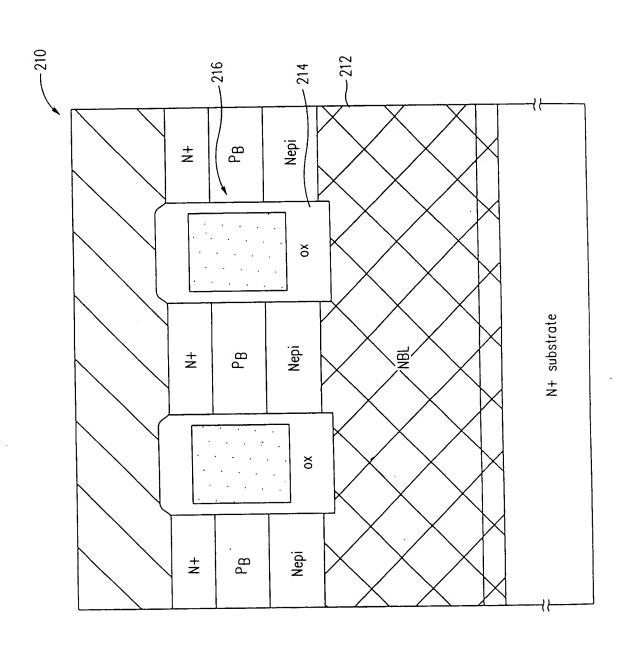
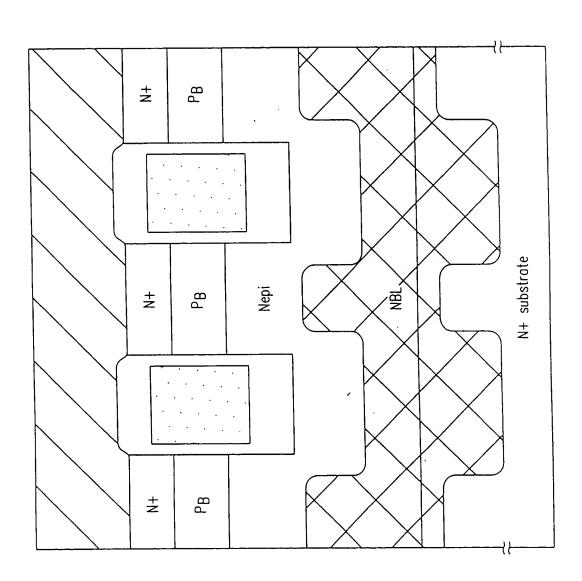
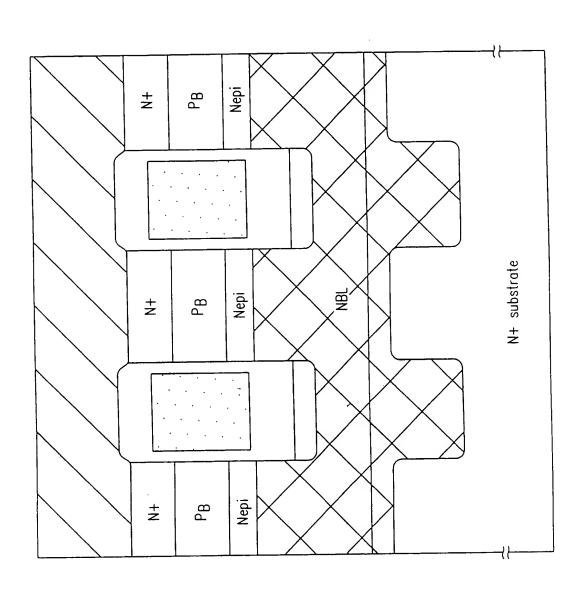


FIG. 211

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 34 of 58



"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 35 of 58

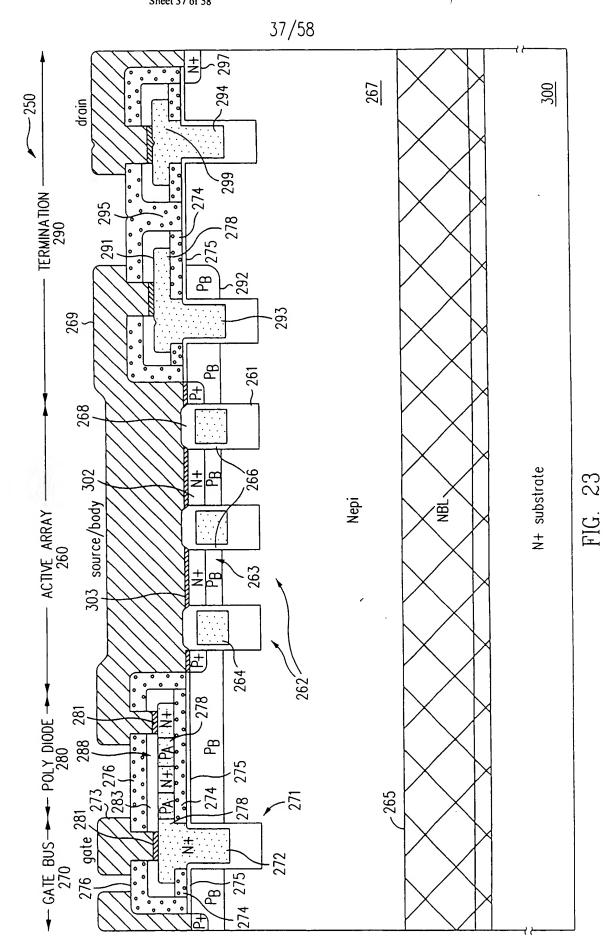


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FIG.

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 37 of 58



"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 38 of 58

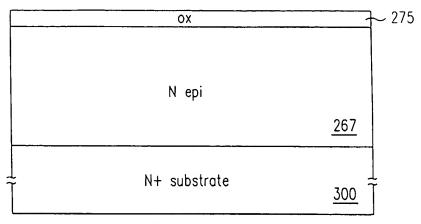


FIG. 24A

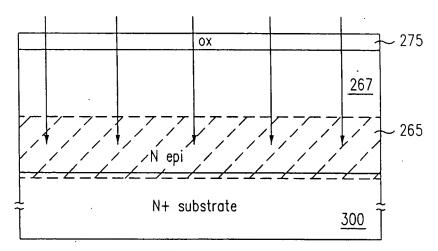


FIG. 24B

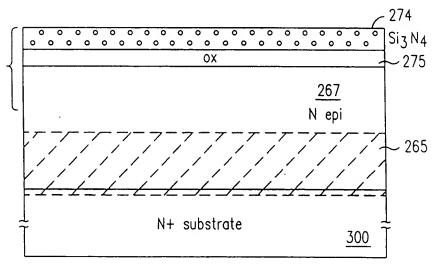


FIG. 24C

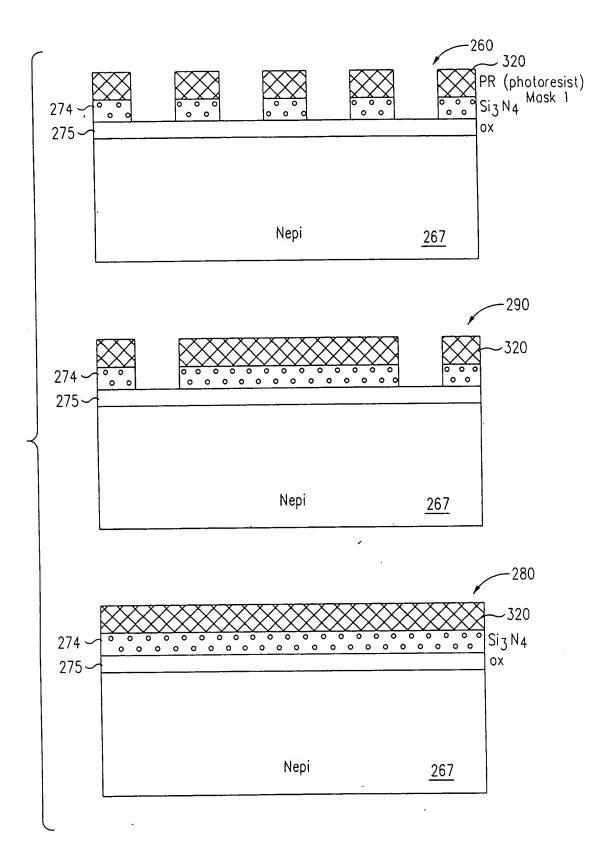


FIG. 24D

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 40 of 58

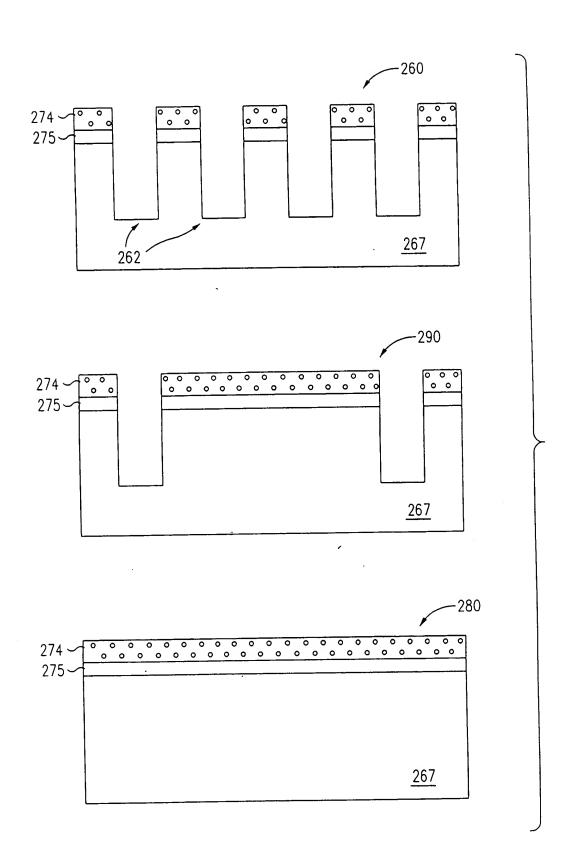


FIG. 24E

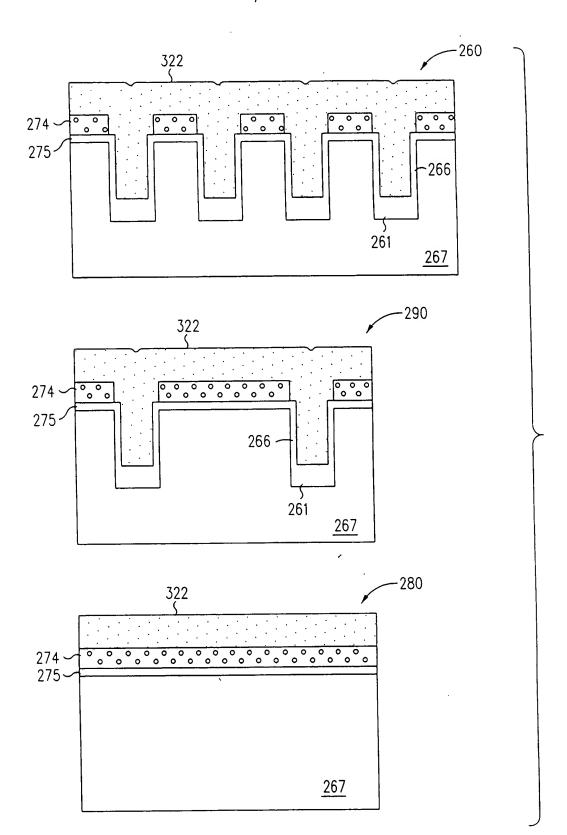


FIG. 24F

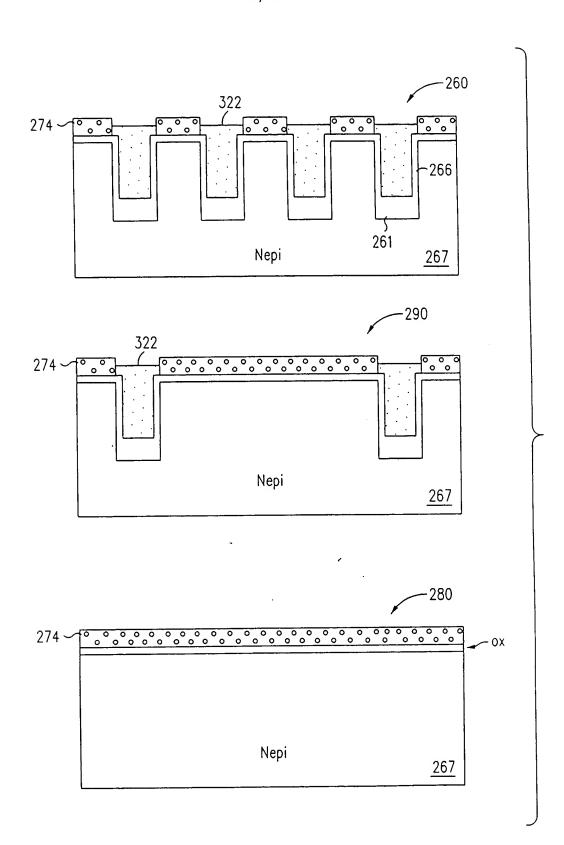


FIG. 24G

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 43 of 58

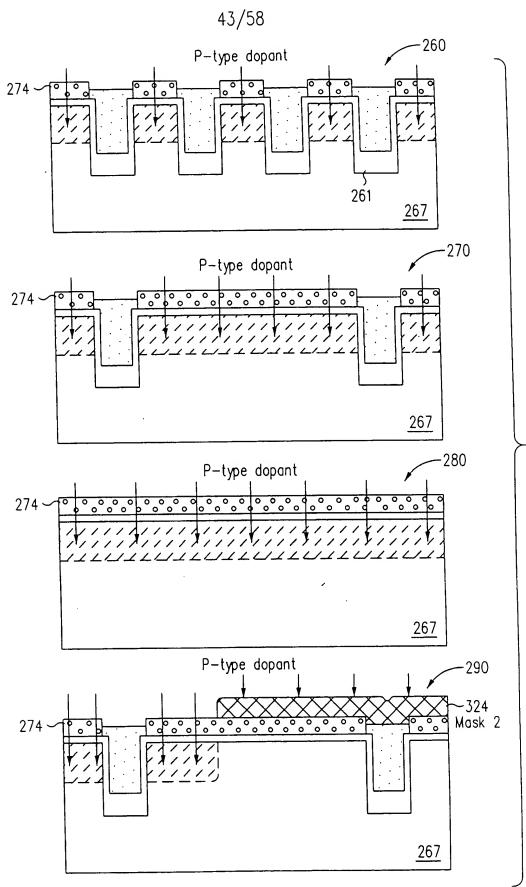
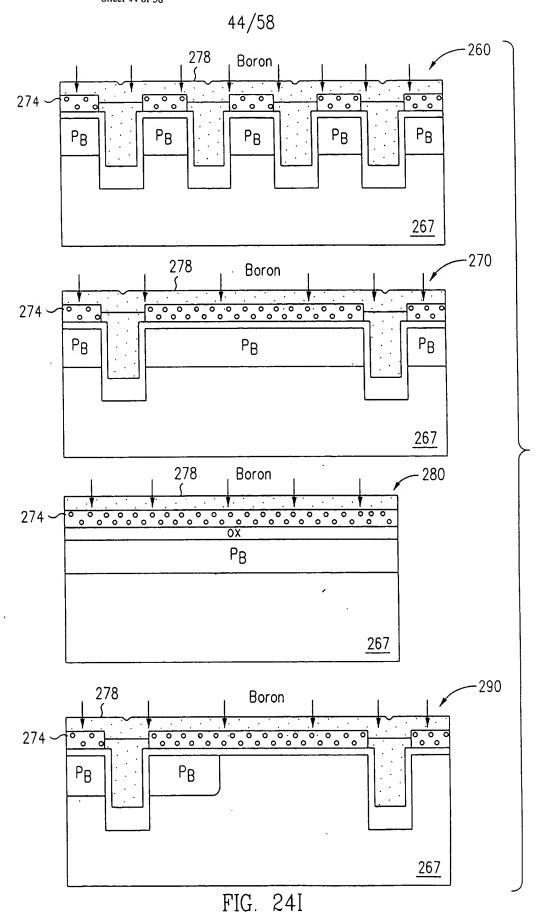


FIG. 24H

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 44 of 58



"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 45 of 58

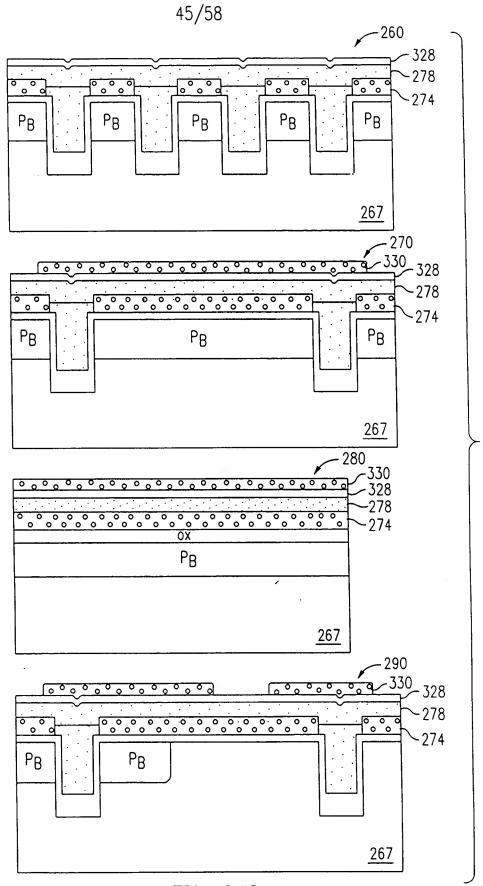


FIG. 24J

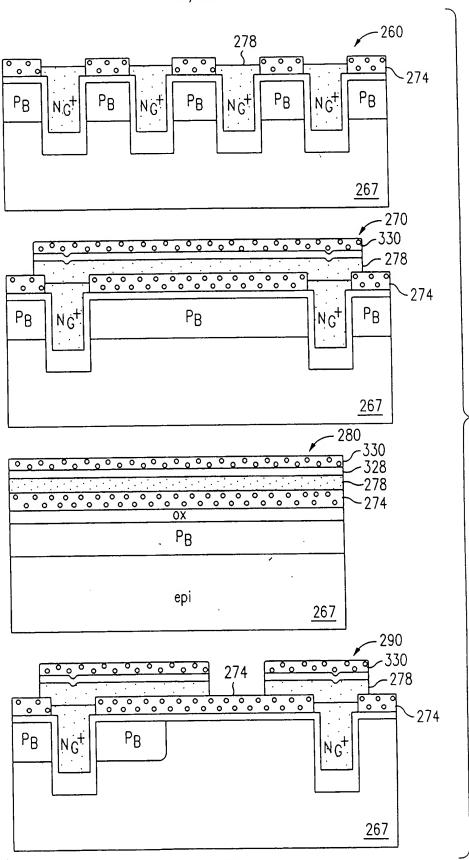


FIG. 24K

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 47 of 58

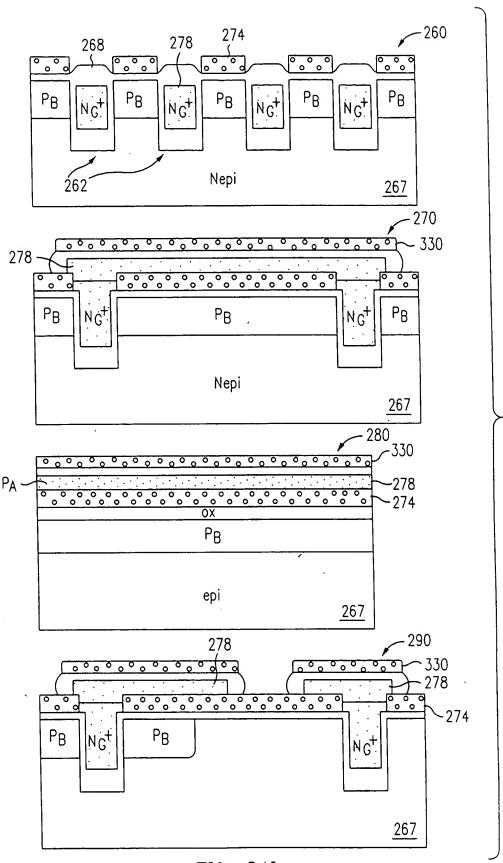


FIG. 24L

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 48 of 58

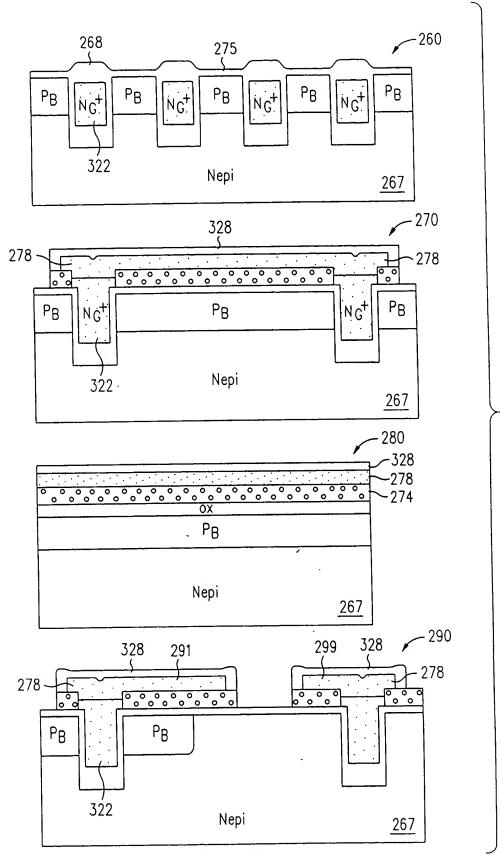


FIG. 24M

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 49 of 58

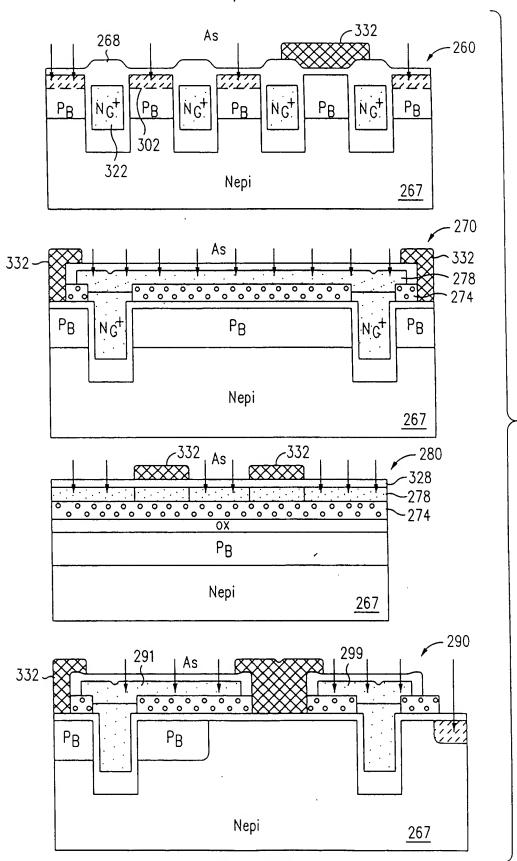


FIG. 24N

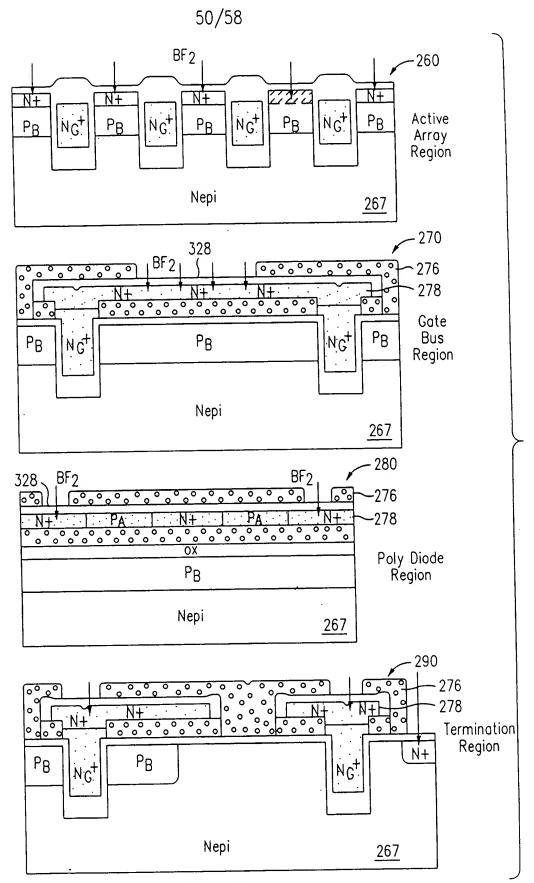


FIG. 240

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 51 of 58

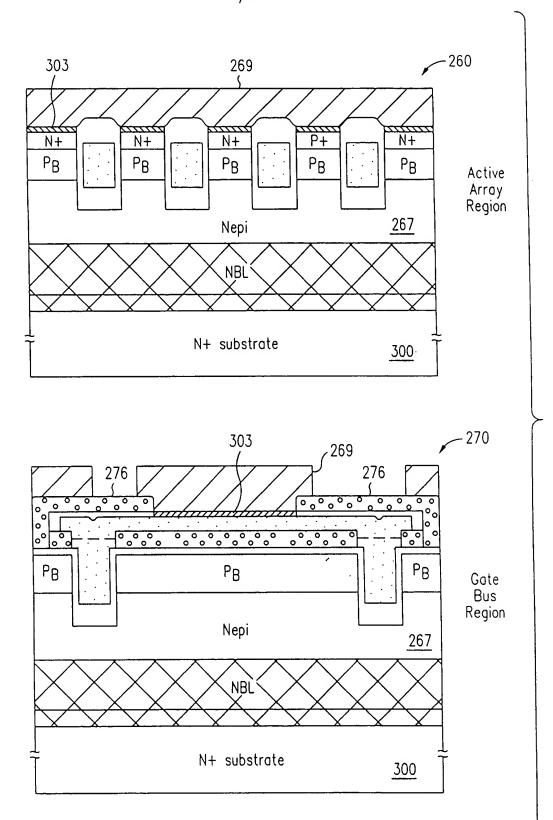


FIG. 24P

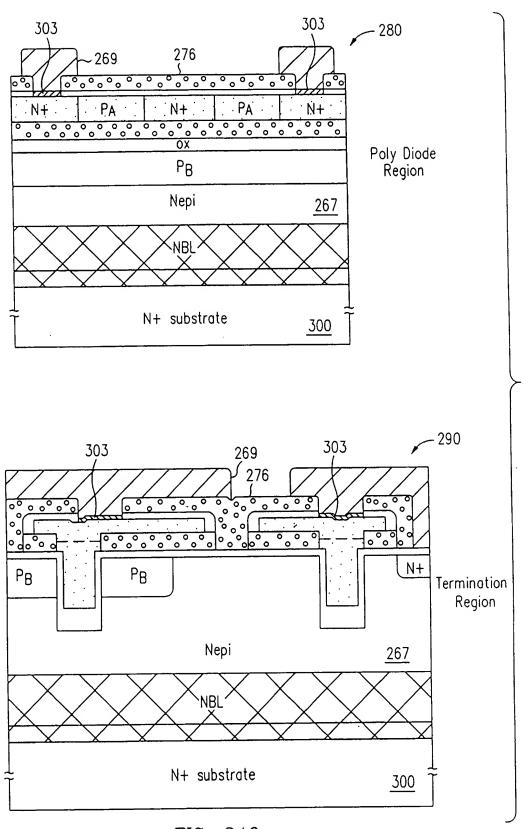
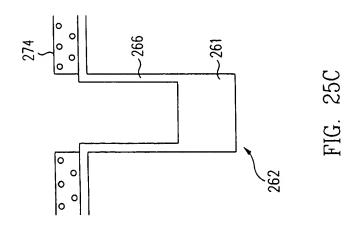
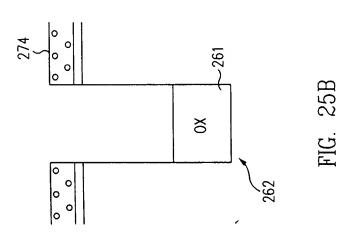


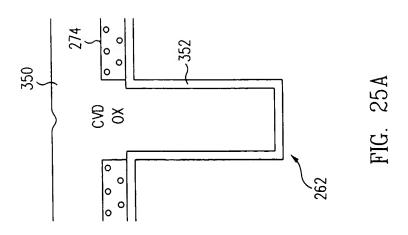
FIG. 24Q

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 53 of 58

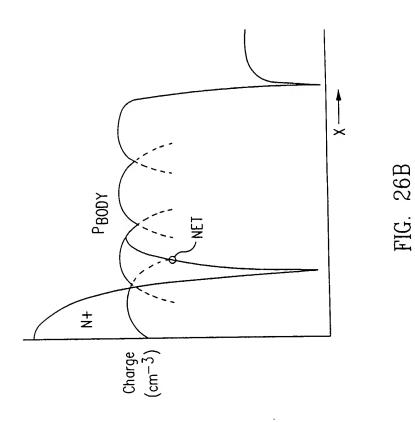
53/58

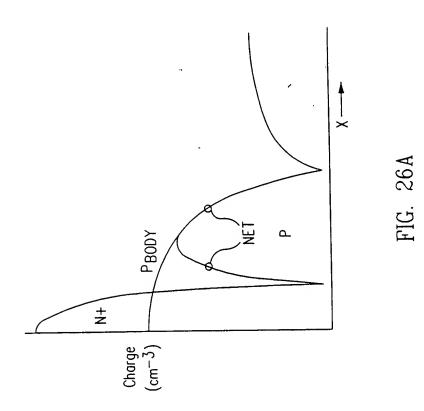




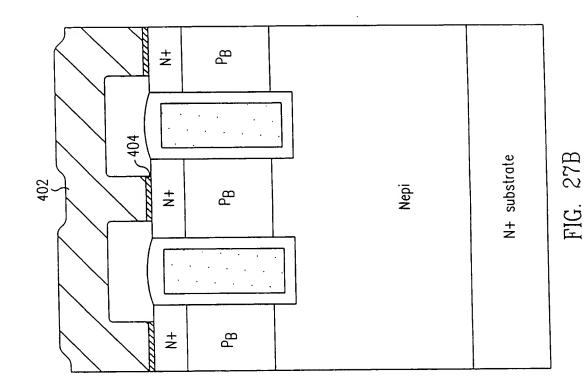


"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 54 of 58





"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 55 of 58



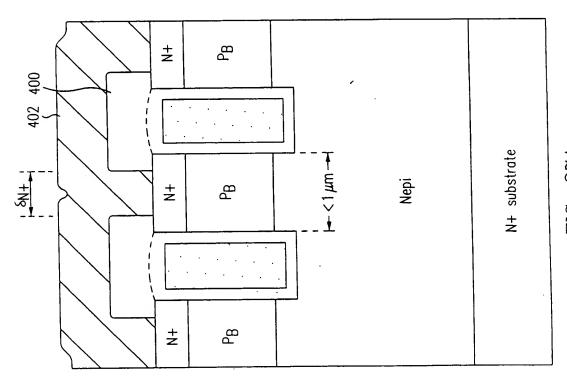
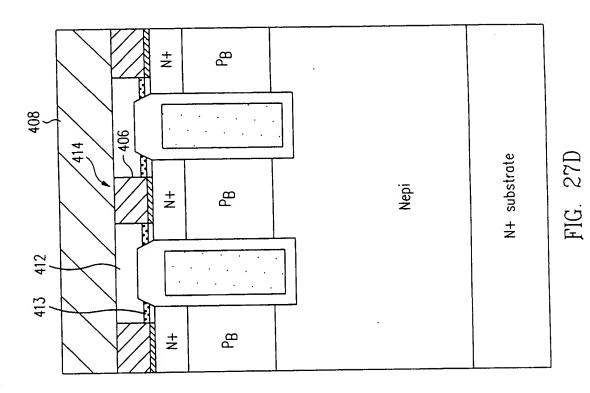


FIG. 27A



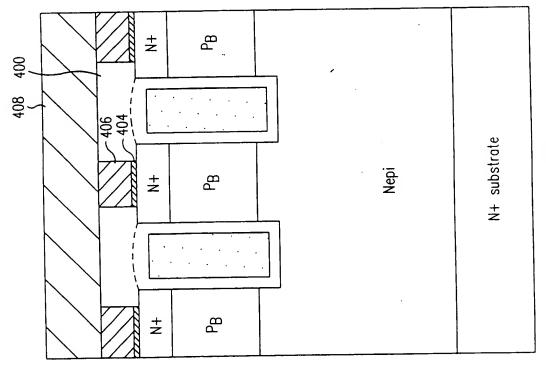
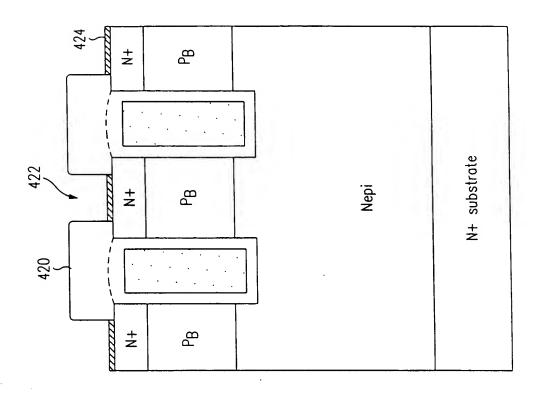


FIG. 270

"Trench Transistor With Chained Implanted Body"; Inventors: Richard K. Williams et al. Atty. Dkt. No. M7207US4D Sheet 57 of 58



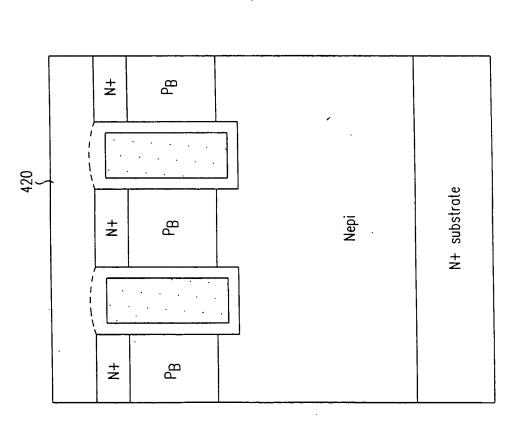
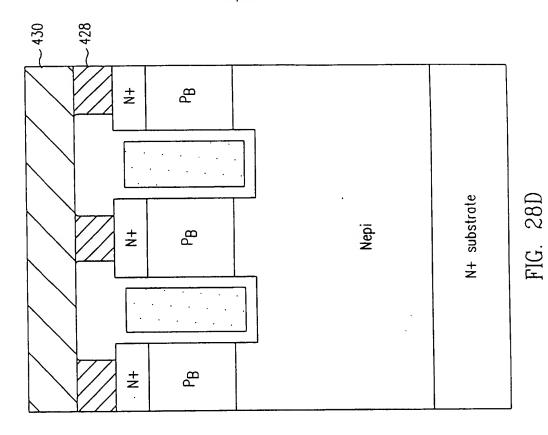


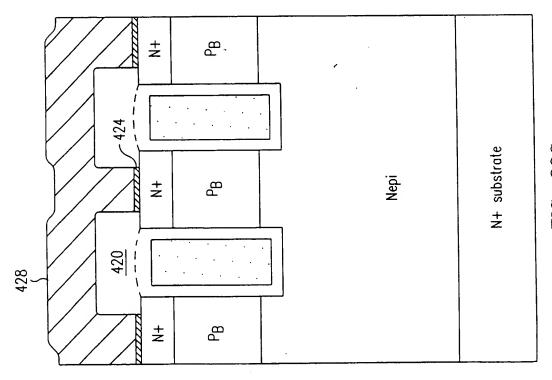
FIG. 28B

41G. 28A

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G. 28C